

Avian cholera



Wetlands supporting
groups of susceptible
animals

Wildlife ✓

Livestock ✓

Human ✓

Synonyms: Fowl cholera, avian pasteurellosis, *Pasteurella multocida* infection, avian haemorrhagic septicaemia

KEY FACTS

What is avian cholera?	A highly infectious bacterial disease which can lead to mass mortality of birds, particularly waterfowl. Death occurs quickly after infection (in less than 24 hours) and the disease can spread rapidly through a wetland killing thousands of birds in a single outbreak. Mass mortality of poultry can cause significant economic impacts on the poultry industry. Outbreaks occur at all times of the year, but major mortality events are usually observed when waterfowl are concentrated in wintering areas or during spring migration. The disease often affects the same wetlands and bird populations each year and outbreaks tend to follow the migration routes of some birds.
Causal agent	The bacterium <i>Pasteurella multocida</i> .
Species affected	Domestic fowl and almost any species of bird can be infected: most commonly ducks, geese, swans, coots, shorebirds, gulls, and crows. The bacterium can also cause infections in domestic cattle, pigs, rabbits, cats and dogs. Infections in humans are most commonly as a result of an animal-related injury.
Geographic distribution	Frequent reports of affected waterfowl in North America but also occurs in South America, Antarctica, Africa, Europe, Asia and Australia.
Environment	Occurs in a range of habitats including freshwater wetlands, brackish marshes, and saltwater environments which support birds.

TRANSMISSION AND SPREAD

Vector(s)	Infected birds, biting arthropods (ticks, mites or flies) and contaminated objects - see below.
How is the disease transmitted to animals?	Direct contact with infected birds, contact with secretions or faeces of infected birds and ingestion of contaminated food (<i>e.g.</i> infected carcasses) or water. Transmission may also occur through the inhalation of airborne water droplets when birds take flight and possibly through mechanical transfer by biting arthropods that feed on birds after having fed upon contaminated carcasses or contaminated environments. Bacteria are released into the environment by dead and dying birds, by live birds carrying the disease or from contaminated objects (<i>e.g.</i> cages, equipment and clothing).
How does the disease spread between groups of animals?	Dense concentrations of waterfowl can enhance disease spread through bird to bird transmission in the ways described above.
How is the disease transmitted to humans?	Most human infections result from an animal bite or scratch, mainly from domestic dogs and cats. Infections can also arise through inhalation of bacteria which is most likely to happen in confined areas of air movement where a large amount of infected material is present (<i>e.g.</i> during disease control operations).

IDENTIFICATION AND RESPONSE

Field signs

The sudden appearance of large numbers of dead birds which are in good body condition with few sick birds observed may signal an outbreak. Birds often die quickly before showing any clinical signs of illness although the number of sick birds increases when a die-off is prolonged over several weeks. Sick birds appear lethargic and may die within minutes of capture. Other signs include:

- Convulsions, swimming in circles, throwing the head back between the wings, erratic flight, mucous discharge from the mouth, soiling or matting of the feathers around the vent, eyes, and bill, nasal discharge and fawn-coloured, yellow or blood-stained droppings.
- Wild ducks and geese are particularly affected.

In poultry, sudden die-offs can occur without obvious signs. Chronic conditions can occur with birds exhibiting depression, diarrhoea and anorexia. Birds may appear lame, weak, wheezing, with swollen wattles, and twisted necks. Avian cholera in poultry can be easily confused with other diseases.

Recommended action if suspected

Contact and seek assistance from animal and human health professionals immediately if there is illness in birds and/or people. Report suspected cases to local or national authorities.

Diagnosis

Isolation of the causative agent by health professionals is needed for a definitive diagnosis. A whole bird carcass is ideally required for laboratory diagnosis. When this is not possible, heart blood, liver tissue and bone marrow should be collected in a sterile manner. Remove whole organs and package at least half of each in separate bags. The samples must be refrigerated as soon as possible after collection and kept cool during shipment. Freeze tissues if transit time is expected to exceed 24 hours.

PREVENTION AND CONTROL IN WETLANDS

Environment

Avian cholera is highly infectious and can spread quickly and so prompt action is needed to prevent and minimise the spread of the disease.

- Healthy waterbirds (*i.e.* ahead of an outbreak or migratory birds not yet at an infected site) can be redistributed to lower risk areas by draining contaminated areas/discouraging wildlife whilst creating/enhancing other habitats. *Take care to ensure these measures do not cause the dispersal of infected birds out of the area.*
- The addition of large volumes of water to a contaminated area can help dilute the bacteria to less dangerous levels.

Livestock

The disease in livestock may be avoided by employing good sanitation and animal management practices.

- Prevent the introduction of infection through movement controls, testing and quarantine.
- Detect any infected animals in the population as early as possible through surveillance and thoroughly investigate all suspect cases.
- Vaccination with an approved vaccine can be effective.

Wildlife

Quick and careful collection of carcasses will reduce the exposure of migratory and scavenger bird species to the bacteria and minimise its transmission.

- Pick up dead birds by the head, preferably by the bill, and immediately placed into two plastic bags to prevent leakage of fluids. Bags should always be securely closed before they are removed from the area.
- Submit carcasses to disease diagnostic laboratories before being

incinerated.

- Remove carcasses before there is a major arrival of scavengers which may spread the disease further. *Take care to ensure these measures do not cause the dispersal of infected birds out of the area.*
- Take care to avoid contaminating new areas whilst carcasses are being transported to the laboratory and disposal site.
- Disinfect field equipment used in infected areas.
- Scavengers and predators can be attracted away from infected areas to other feeding sites using other food sources such as road killed carcasses.
- These actions need careful evaluation of bird movement patterns and of the disease cycle to assess whether they are suitable. Moving infected or potentially infected birds from one geographical location to another is not advised.

Vaccination to protect captive or endangered waterbirds may be appropriate however efficacy and safety information are often lacking. There is no practical method for immunising large numbers of free-living migratory birds.

Monitoring and surveillance

Regular monitoring of live and dead birds, particularly in endemic areas and areas where migratory birds are concentrated, can help identify early stages of an outbreak and allows disease control activities to be activated before the outbreaks develop further.

Humans

- Wear gloves and thoroughly wash exposed skin surfaces after any contact with contaminated birds.
- Process infected birds outdoors or in a well ventilated area. When disposing of carcasses by open burning, care should be taken to avoid direct exposure to smoke from the fire.

IMPORTANCE

Effect on wildlife

Causes significant mass mortality of birds, particularly when bird density is high. Large gatherings of wild waterfowl are particularly affected with mortality known to exceed more than 1,000 birds per day. There may be a significant impact on wild bird populations when breeding birds are affected and through reduced survival rates of disease-carrying waterfowl. Avian cholera is becoming an increasing threat to endangered avian species due to increasing numbers of outbreaks and the expanding geographic distribution of the disease. The disease can result in negative perception and therefore unnecessary control measures directed at wildlife.

Effect on livestock

Causes significant mass mortality of poultry and can affect future viability of poultry flocks.

Effect on humans

Not considered a high risk disease for humans although infections are not uncommon.

Economic importance

Potential for significant economic impacts on the poultry industry through mass mortality of birds.

FURTHER INFORMATION

Useful publications and websites

- ☐ Blanchong, J.A., Samuel, M.D., Goldberg, D.R., Shaddock, D.J. & Creekmore, L.H. (2006). **Wetland environmental conditions associated with the risk of avian cholera outbreaks and the abundance of *Pasteurella multocida***. *The Journal of Wildlife Management*, 70 (1): 54-60.
- ☐ Samuel, M.D., Botzler, R. G. & Wobeser, G. A. (2007). **Avian cholera**, pp. 239-269. In: *Infectious diseases of wild birds*, Thomas, N. J., Hunter, D. B., & Atkinson, C. T., (eds.), Blackwell Publishing Ltd., Oxford, UK.
- ☐ Friend, M. & Franson, J.C. (2001). **Avian cholera**. In: *Field manual of wildlife diseases: general field procedures and diseases of birds*. E. A. Ciganovich (ed.). pp. 75-92. U.S. Department of the Interior and U.S. Geological Survey, Washington, DC. http://www.nwhc.usgs.gov/publications/field_manual/chapter_7.pdf [Accessed March 2012].
- ☐ U.S Geological Survey (USGS) National Wildlife Health Center. **Avian cholera**. www.nwhc.usgs.gov/disease_information/avian_cholera/index.jsp [Accessed March 2012].
- ☐ Wildpro. **Avian cholera**. http://wildpro.twycrosszoo.org/S/00dis/Bacterial/Avian_Cholera.htm [Accessed March 2012].

Contacts

- ☐ **FAO Animal Production and Health Division**. www.fao.org/ag/againfo/home/en/who.htm [Accessed March 2012].